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Gas cylinders — Non-refillable metallic gas cylinders — Specification and test methods

*Bouteilles à gaz — Bouteilles à gaz métalliques non rechargeables —
Spécifications et méthodes d'essai*



Reference number
ISO 11118:1999(E)

Contents

	Page
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Symbols	3
5 Materials	3
6 Inspection and testing	6
7 Design	6
8 Construction and workmanship	7
9 Type approval procedure	10
10 Batch tests	14
11 Tests on every cylinder — pressure and leak tests	15
12 Markings	15
Annex A (normative) Pressures and temperatures	17
Bibliography	18

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11118 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 3, *Gas cylinder design*.

Annex A forms a normative part of this International Standard.

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Introduction

The purpose of this International Standard is to provide a specification for the design, manufacture, inspection and testing of non-refillable metallic gas cylinders for worldwide usage. The objective is to balance design and economic efficiency against international acceptance and universal utility.

This International Standard aims to eliminate the concern about climate, duplicate inspections and restrictions currently existent because of lack of definitive International Standards. This International Standard should not be considered as reflecting on the suitability of the practice of any nation or region.

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Gas cylinders — Non-refillable metallic gas cylinders — Specification and test methods

1 Scope

This International Standard specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests at manufacture of non-refillable metallic gas cylinders of welded, brazed or seamless construction for compressed, liquefied and dissolved gases exposed to extreme worldwide ambient temperatures.

NOTE The specific gases permitted in cylinders constructed to this International Standard may be limited by ISO, national requirements or international requirements.

This International Standard is applicable to cylinders where:

- a) the maximum permissible operating pressure does not exceed 250 bar (i.e. $p_{ms} \leq 250$ bar);
- b) the product of the maximum permissible operating pressure and the water capacity does not exceed 1 000 bar.litres (i.e. $p_{ms} \cdot V \leq 1\,000$ bar.l);
- c) where the maximum permissible operating pressure exceeds 35 bar, the water capacity does not exceed 5 l (i.e. for $p_{ms} > 35$ bar, then $V \leq 5$ l).

This International Standard is not applicable to cylinders exceeding these pressure and volume limits, for which reference may be made to refillable cylinder standards.

This International Standard is also not applicable to cartridges/aerosol dispensers¹⁾ and spherical containers.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*.

ISO 3574:1986, *Cold reduced carbon steel sheet of commercial and drawing qualities*.

¹⁾ Cartridges are non-refillable containers which do not contain an integral dispensing device, have a maximum water capacity of 1 l and have a limited maximum permissible operating pressure (as defined by the country of use). Aerosol dispensers are non-refillable thin-walled containers which do contain an integral dispensing device, have a maximum water capacity of 1 l and have a limited maximum permissible operating pressure (as defined by the country of use).

ISO 3807²⁾, *Dissolved acetylene cylinders — Basic requirements.*

ISO 4705:1983, *Refillable seamless steel gas cylinders.*

ISO 4706, *Refillable welded steel gas cylinders.*

ISO 6892, *Metallic materials — Tensile testing at ambient temperature.*

ISO 7866:1999, *Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing.*

ISO 9328-5, *Steel plates and strips for pressure purposes — Technical delivery conditions — Part 5: Austenitic steels.*

ISO 9809-1:1999, *Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 1: Quenched and tempered steel cylinders with tensile strength less than 1100 MPa.*

ISO 9809-2:1999, *Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1100 MPa.*

ISO 11114-1, *Transportable gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 1: Metallic materials.*

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

3.1 batch

quantity of completed and pressure-tested cylinders of the same design, prototype design, water capacity, material, heat treatment (if any) and manufacturing process made successively during one production shift of up to 12 h

3.2 cylindrical shell

portion of the cylinder, excluding the heads (ends), which is parallel to the centreline axis of the cylinder

3.3 heads (ends)

portions of the cylinder which are not parallel to the centreline axis of the cylinder

3.4 material certificate

document, issued by the material manufacturer, which states the chemical analysis, mechanical properties, heat treatment, processing techniques or other properties/features if required

3.5 burst pressure

highest pressure reached in a cylinder during the burst test

3.6 maximum permissible operating pressure

highest pressure permitted to be developed during service

²⁾ To be replaced by ISO 3807-1 and ISO 3807-2.